National Aeronautics and Space Administration

Train Like an Astronaut: Adapted Physical Activity Strategies

Speed of Light

YOUR MISSION

You will perform a time reaction activity using a ruler to practice your hand-eye reaction time and improve your concentration. You will collect, record, and analyze data during the skill-based experience in your Mission Journal.

LINK TO SKILLS AND STANDARDS

APENS: 2.03.04.01

- Understand how certain types of disabilities may affect reaction time
- Modify activities to allow more or less processing time, as needed

Activity Specific Terms/Skills

Hand-eye coordination, fine-motor skills, communication, team work, reaction time

SPACE RELEVANCE

Reaction time can be improved with training. Operating the robotic arm on the International Space Station (ISS) or landing the space shuttle requires crew members to have quick reaction times. Crew members must also be prepared for environmental hazards such as lighting and solar winds which could have a negative impact on reaction times.

Space shuttle pilots used simulators on Earth to improve hand-eye coordination and sharpen concentration skills. Experience has shown that shuttle pilots with better hand-eye coordination and sharper concentration skills had more success landing the shuttle after a 12 to 14 day mission.

WARM-UP & PRACTICE

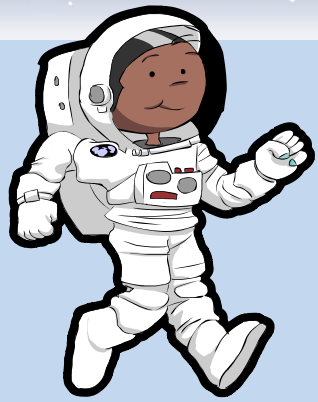
- Provide a stimulus to generate reactionary response
- Squeeze stress balls; squeeze and release hands
- Practice dropping or catching an object
- Wrist circles
- Catching a ball
- Play catch
- Passing a ball around
- Running to pick-up objects and bring back
- Touch each other's hands quickly
- Play rock, papers, scissors

SUGGESTED ADAPTED EQUIPMENT:

- POOL NOODLE
- YARD STICK
- TAP LIGHTS

Speed of Light

LET'S "TRAIN LIKE AN ASTRONAUT!"



Instructions for individual or group play: (Adjust steps and procedures as appropriate for participants)

You will complete this mission by yourself or with a leader.

One person will be the crew member and the other the trainer. You will sit or stand directly across from each other. Progress towards two players independently playing.

The crew member will do the following:

- Extend your dominant arm out in front of your body.
- Make a fist with your hand, thumb side up.
- Point your thumb and index finger forward, keeping them about 2 cm apart.
- Use your index finger and thumb to catch the ruler immediately after it has been released by the trainer.

The trainer will do the following:

- Hold the ruler between the outstretched index finger and thumb of the crew member's dominant hand.
- Line the top of the crew member's thumb level with the zero centimeter line on the ruler.
- Without warning, release the ruler letting it fall between the crew member's thumb and index finger. When the crew member catches the ruler, determine the distance between the bottom of the ruler and the top of the crew member's thumb.

Record the measurement in centimeters in your Mission Journal.
Repeat and record for a total of ten times.
Switch roles and repeat the procedure above for a total of ten trials.

TRY THIS! *Some ideas for Adapted Activity*

- Use a full-hand grip
- Perform while seated or supported against a wall
- Choose a yard stick or longer item
- Select brightly colored objects, or ones with wide stripes to visibly measure reaction speed
- Try a slower moving object such as a plastic bag
- Instead of catching the item, have participant drop an item (like a ruler or noodle) at the same time as instructor
- Pool noodle instead of yard stick
- Tap light or sound emitting device